WHAT IS CLAIMED IS:

1. A method of producing rolling elements for a rolling bearing, comprising:

mixing rounded elements made of steel balls and spherical rolling elements each of which has rolling contact faces having curvatures in an axial direction thereof and a radial direction normal to the axial direction and has at least one plane; and

placing and processing the thus mixed elements into a space between two processing discs opposing each other, whereby the surfaces of the rounded elements and the spherical rolling elements are processed to be rounded.

2. The method according to claim 1, wherein in the said mixing step, a mixing ratio of said spherical rolling elements relative to said rounded elements is set in a range of 10 to 95%.

3. The method according to claim 1, wherein in the said mixing step, a mixing ratio of said spherical rolling elements relative to said rounded elements is set in a range of 10 to 75%.

4. The method according to claim 1, wherein each of

said spherical rolling elements has two opposite planes.

5. Rolling elements for a bearing that are produced by the method according to claim 1.

6. Rolling elements according to claim 5, wherein each of said spherical rolling elements has two opposite planes.

7. A rolling bearing including a plurality of rolling elements that are produced by the method according to claim 1.

8. The rolling bearing according to claim 7, further comprising:

a first bearing ring has a raceway groove defined by two first raceway surfaces each larger in diameter than radius of the rolling element, and an outer diameter portion of each rolling element always contacts with one of the first raceway surface,

a second bearing ring has a raceway groove with at least one second raceway surface that is larger in diameter than radius of the rolling element, and an outer diameter portion of each rolling element always contacts with one of

the at least one second raceway surface,

wherein the rolling elements are rotatably disposed between the first and second bearing rings and alternately arranged in a circumference direction thereof as crossing with one another, and

wherein the outer diameter portions of the rolling elements always contact with the first and second bearing rings at the two points in total one by one.

9. The rolling bearing according to claim 8, wherein a lubricant storing recess is formed the at least one plane.

10. A method of producing rolling elements for a rolling bearing, comprising:

placing a wire material of predetermined length in a space that is defined by at least first and second molds and has a predetermined shape;

forge-forming the wire material into a blank ball for each rolling elements, said blank ball including an outer diameter portion becoming a rolling contact face that has curvatures in an axial direction thereof and a radial direction normal to the axial direction and including at least one plane; and

removing an extra flesh from the outer diameter

portion of the blank ball, to thereby produce each of the rolling elements.

11. The method according to claim 10, further comprising:

releasing the blank ball thus forge-formed from the space, before the removing step is carried out.

12. The method according to claim 10, wherein the blank ball thus forge-formed has a connecting portion that is located between the rolling contact face and one of the at least one plane and has a predetermined radius of curvature.

13. Rolling elements for a bearing that are produced by the method according to claim 10.

14. Rolling elements according to claim 13, wherein each of said spherical rolling elements has two opposite planes.

15. A rolling bearing including a plurality of rolling elements that are produced by the method according to claim 10.

16. The rolling bearing according to claim 15, wherein said rolling bearing comprises:

a first bearing ring has a raceway groove defined by two first raceway surfaces each larger in diameter than radius of the rolling element, and an outer diameter portion of each rolling element always contacts with one of the first raceway surfaces; and

a second bearing ring has a raceway groove with at least one second raceway surface that is larger in diameter than radius of the rolling element, and an outer diameter portion of each rolling element always contacts with one of the at least one second raceway surfaces,

wherein the rolling elements are rotatably disposed between the first and second bearing rings and alternately arranged in a circumference direction thereof as crossing with one another, and

wherein the outer diameter portions of the rolling elements always contact with the first and second bearing rings at the two points in total one by one.

17. The rolling bearing according to claim 16, wherein the blank ball thus forge-formed has a connecting portion that is located between the rolling contact face

and one of the at least one plane and has a predetermined radius of curvature.

18. The rolling bearing according to claim 16, wherein a lubricant storing recess is formed on the at least one plane.

19. A rolling bearing comprising;

a plurality of spherical rolling elements each of which has a rolling contact face having curvatures in an axial direction thereof and a radial direction normal to the axial direction and has at least one plane; and

an first bearing ring having a raceway groove defined by two first raceway surfaces each larger in diameter than radius of the rolling element, and an outer diameter portion of each rolling element always contacting with one of the first raceway surface;

a second bearing ring has a raceway groove with at least one second raceway surface that is larger in diameter than radius of the rolling element, and an outer diameter portion of each rolling element always contacts with one of the at least one second raceway surface, whereby the outer diameter portions of the rolling elements always contact at the two points in total one by one;

a lubricant storing recess formed the at least one plane of the at the one plane,

wherein the rolling elements are rotatably disposed between the first and second bearing rings and alternately arranged in a circumference direction thereof as crossing with one another, and

wherein the outer diameter portions of the rolling elements always contact with the first and second bearing rings at the two points in total one by one.

20. The rolling bearing according to claim 19, wherein in each of the rolling elements, a connecting point between the plane and the outer diameter portion has a predetermined radius of curvature.

21. The rolling bearing according to claim 20, further comprising:

a retainer having a guiding face that guides the at least one plane of the rolling element and extends in a direction neither perpendicular nor parallel to a rotating axis of the bearing.

22. The rolling bearing according to claim 21, wherein a retainer having circumference pockets that

rotatably hold and guide the rolling elements in such a manner that central axes of rotations of the rolling elements cross with one another in a circumferential direction thereof.

23. The rolling bearing according to claim 22, wherein each rolling element is formed with two planes of the at least one plane, and each of the pockets is formed with parallel guiding faces for guiding the two planes, the parallel guiding faces being inclined at an angle of equivalent level to a contact angle of the rolling element.

24. The rolling bearing according to claim 19, further comprising:

a retainer for rotatably holding said rolling elements,

wherein each rolling element is formed with two planes, and the retainer is a separator that is disposed between the rolling elements and has opposite recessed arc grooves that are confronted with the rolling elements.

25. The rolling bearing according to claim 24, wherein the separator has a smaller diameter than that of the rolling element, and the recessed arc grooves are

provided in such a manner that longitudinal directions thereof are crossed each other.

26. The rolling bearing according to claim 25, wherein the radius of curvature of each recessed arc groove is substantially equal to or larger that of the outer diameter portion of the rolling element.

27. The rolling bearing according to claim 22, wherein each rolling element is formed with one plane of the at least one plane, and the pocket formed in the retainer is formed into a doom shape with arc face with slightly larger diameter than that of the rolling element and a flat face connecting edges of the arc face.

28. The rolling bearing according to claim 27, wherein said flat face includes an oblique guide face that extends from an outer diameter side to an inner diameter side, and an opening width W2 in an axial direction of the bearing at the inner diameter side of the pocket is larger than an opening width W1 in an axial direction of the bearing at the outer diameter side thereof.

29. The rolling bearing according to claim 28,

wherein a fall-avoiding piece is formed at the outer diameter side of the oblique face.

30. The rolling bearing according to claim 21, wherein the at least one plane of the rolling element is one plane, and each pocket formed in the retainer is a rectangular shape.

31. The rolling bearing according to claim 22, wherein the at least one plane of the rolling element is one plane, the retainer is a separator disposed between the rolling elements, and the separator is formed with the recessed face opposite to the rolling element, the recess face having a step as the guiding face for the one plane.

32. The rolling bearing according to claim 2, wherein the at least one plane of the rolling element comprises two planes different in size, and one of the plane faces having larger size is directed towards one of first and second bearing rings that is disposed inside.